



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/702,439	11/07/2003	Yoshiyuki Kamata	03180.0341	9408
22852	7590	06/16/2005	EXAMINER	
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			BERNATZ, KEVIN M	
			ART UNIT	PAPER NUMBER
			1773	

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/702,439

Applicant(s)

KAMATA ET AL.

Examiner

Kevin M Bernatz

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 11-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-10 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☒ Claim(s) 1-21 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/7/2003; 8/12/2004; 3/23/2005
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1 - 10, drawn to a magnetic recording medium, classified in class 428, subclass 694+.
 - II. Claims 11 - 21, drawn to a method of making a magnetic recording medium via injection molding, classified in class 427, subclass 127+.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process, such as by lithography and the process as claimed can be used to make another and materially different product, such as forming the soft magnetic layer on a magnetic "substrate".
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Mr. Richard Burgujian on March 9, 2005 a provisional election was made without traverse to prosecute the invention of Group I,

claims 1 - 10. Affirmation of this election must be made by applicant in replying to this Office action. Claims 11 – 21 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Examiner's Comments

6. Regarding the limitation(s) “separated magnetically from their surroundings” in claims 1 and 9, the Examiner has given the term(s) the broadest reasonable interpretation(s) consistent with the written description in applicants' specification as it would be interpreted by one of ordinary skill in the art. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Donaldson Co., Inc.*, 16 F.3d 1190, 1192-95, 29 USPQ2d 1845, 1848-50 (Fed. Cir. 1994). See MPEP 2111.

Specifically, the Examiner notes that applicants' as-filed specification clearly indicate that the above limitation, in it's broadest reasonable interpretation, means that each individual recording area are separated magnetically from each other.

7. Regarding the limitation(s) “flat surface” in claims 3 and 4, the Examiner has given the term(s) the broadest reasonable interpretation(s) consistent with the written description in applicants' specification as it would be interpreted by one of ordinary skill

Art Unit: 1773

in the art. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Donaldson Co., Inc.*, 16 F.3d 1190, 1192-95, 29 USPQ2d 1845, 1848-50 (Fed. Cir. 1994). See MPEP 2111. Specifically, the Examiner notes has interpreted “flat” to apply to a layer without macroscopic texturing of “projected parts” and “recessed parts”. Texturing induced by polishing, etc. on a microscopic scale are not deemed to be excluded by the use of “flat surface” as would be recognized by one of ordinary skill in the art.

Specification

8. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: after “Medium”, insert the phrase “Having a Patterned Soft Magnetic Layer”.

Claim Objections

9. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 4, 6 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "fine" in claim 4 is a relative term which renders the claim indefinite. The term "fine" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For the purpose of evaluating the prior art, the Examiner has interpreted any size particles used in the magnetic recording field to meet the limitation "fine".

Claims 6 and 7 recite a "thickness" direction and a "height" direction, but do not positively recite what direction these are relative to the plane of the layer. For purposes of evaluating the prior art, the Examiner has taken both the "thickness" and "height" directions to be perpendicular to the plane of the substrate (i.e. L1 and L2 in Figure 2A).

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 1 and 3 – 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Kikitsu et al. (U.S. Patent App. No. 2004/0131890 A1).

Regarding claim 1, Kikitsu et al. disclose a magnetic recording medium comprising a non-magnetic substrate (*Figure 4, element 11*), a soft magnetic layer formed on the non-magnetic substrate (*elements 12 + 14*), the soft magnetic layer including a plurality of projected parts arranged regularly on a surface thereof and recessed parts surrounding each of the projected parts (*elements 14 and spaces between elements 14*); a ferromagnetic layer formed on the soft magnetic layer (*element 25*), the ferromagnetic layer including projected parts and recessed parts reflecting the projected parts and the recessed parts of the soft magnetic layer (see *Figure*); and recording areas having perpendicular magnetic anisotropy and ferromagnetism (*Paragraph 0041*), the recording areas being formed of the projected

parts of the ferromagnetic layer and being separated magnetically from their surroundings (*Paragraph 0016*).

Regarding claims 3 and 4, Kikitsu et al. disclose structures meeting applicants' claimed limitations (*Figure 4*).

Regarding claim 5, Kikitsu et al. disclose in-plane orientation of the soft magnetic layer (*Paragraph 0046*).

Regarding claims 6 and 7, Kikitsu et al. disclose embodiments meeting applicants' claimed limitations (*Experiment 1, Paragraphs 0076 – 0077*).

Regarding claim 8, Kikitsu et al. disclose artificial lattice layers as suitable magnetic recording layers (*Paragraph 0041*).

Regarding claim 9, Kikitsu et al. disclose a magnetic recording medium comprising a non-magnetic substrate (*Figure 4, element 11*) including a plurality of projected parts arranged regularly on a surface thereof (*elements 14*) and recessed parts surrounding each projected part (*areas between elements 14*), a magnetic layer formed on the non-magnetic substrate (*element 25*), the magnetic layer including a plurality of projected parts and recessed parts reflecting the projected parts and the recessed parts of the non-magnetic substrate (*see Figure*); recording areas having perpendicular magnetic anisotropy and ferromagnetism (*Paragraph 0016 and 0041*), the recording areas being formed of the projected parts of the magnetic layer, and being magnetically separated from their surroundings (*Paragraph 0016*), and non-recording areas having soft magnetism (*element 12 in the areas between elements 14*), the non-recording areas being formed of the magnetic layer excepting the recording areas

Art Unit: 1773

(areas between elements 14 are defined as the non-recording areas per Paragraph 0016).

Regarding claim 10, Kikitsu et al. disclose artificial lattice layers as suitable magnetic recording layers (*Paragraph 0041*).

14. Claim 9 is rejected under 35 U.S.C. 102(a), (b), and (e) as being anticipated by Ishida et al. (U.S. Patent No. 6,347,016 B1).

Regarding claim 9, Ishida et al. disclose a magnetic recording medium comprising a non-magnetic substrate (*Figure 4, element 41*) including a plurality of projected parts arranged regularly on a surface thereof and recessed parts surrounding each projected part (*see Figure*), a magnetic layer formed on the non-magnetic substrate (*element 42*), the magnetic layer including a plurality of projected parts and recessed parts reflecting the projected parts and the recessed parts of the non-magnetic substrate (*see Figure*); recording areas having perpendicular magnetic anisotropy and ferromagnetism (*col. 10, lines 21 - 46*), the recording areas being formed of the projected parts of the magnetic layer, and being magnetically separated from their surroundings (*col. 8, lines 44 - 51 and col. 9, lines 11 - 21*), and non-recording areas having soft magnetism (*col. 10, lines 21 - 24 and examples*), the non-recording areas being formed of the magnetic layer excepting the recording areas (*where the raised embossed portions of the magnetic layer are taught to be the recording areas as noted above*).

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Suzuki et al. (U.S. Patent No. 5,995,309) teach a patterned recording medium comprising a patterned soft magnetic layer (*Figure 11 and relevant disclosure thereto*). Nishikawa et al. (U.S. Patent No. 6,790,534 B2) teach a patterned perpendicular recording medium wherein the perpendicular magnetic material is formed only on top of the soft magnetic material in the recessed portions of the soft magnetic layer (*Figures 8 and 9*). Aoki (U.S. Patent No. 6,772,507 B2) teach a similar structure as Suzuki et al. (*Figures 6A – 6C and relevant disclosure thereto*). Belser (U.S. Patent No. 6,703,099 B2) teach a perpendicular recording medium comprising a patterned substrate with soft magnetic material filling only the recesses in the patterned substrate and a flat magnetic layer thereon (*Figure 3h and relevant disclosure thereto*). Saito (U.S. Patent No. 6,579,634 B2) teach a longitudinal patterned recording medium comprising a discrete soft magnetic domains and hard magnetic domains stacked either on top of each other, or adjacent to each other (*Figures 1 – 9 and relevant disclosure thereto*). The Examiner notes that none of the above references are deemed to anticipate or render obvious the presently claimed invention, either alone or in combination with additional prior art teachings.


16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

Art Unit: 1773

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB
June 10, 2005


Kevin M. Bernatz, PhD
Primary Examiner